

New and existing combinations in Palaeotropical *Phlegmariurus* (Lycopodiaceae) and lectotypification of the type species *Phlegmariurus phlegmaria* (L.) T.Sen & U.Sen.

Ashley R. Field^{1,2}, Peter D. Bostock²

1 Australian Tropical Herbarium, James Cook University, Smithfield, Q 4878, Australia **2** Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts, Brisbane Botanic Gardens Mt Coot-tha, Toowong Q 4066, Australia

Corresponding author: Ashley R. Field (ashley.field@jcu.edu.au)

Academic editor: T. Ranker | Received 19 September 2012 | Accepted 29 January 2013 | Published 26 February 2013

Citation: Field AR, Bostock PD (2013) New and existing combinations in Palaeotropical *Phlegmariurus* (Lycopodiaceae) and lectotypification of the type species *Phlegmariurus phlegmaria* (L.) T.Sen & U.Sen. PhytoKeys 20: 33–51. doi: 10.3897/phytokeys.20.4007

Abstract

The genus *Phlegmariurus* Holub is recognised more widely than originally proposed and is circumscribed to include both Neotropic and Palaeotropic epiphytic and terrestrial species of Huperzioid Lycopodiaceae that have isotomous shoots, lack bulbils in their sporophyllous shoots and have spores with convex lateral margins and foveolate-fossulate sculpture restricted to their distal surfaces. New combinations with *Phlegmariurus* are proposed for 81 species and existing combinations identified for 33 species originating from the Palaeotropics. This installs a generic circumscription that is consistent between the Neotropics and Palaeotropics. A lectotype is designated for the type species of the genus, *Phlegmariurus phlegmaria* (L.) T.Sen & U.Sen.

Keywords

Lycopodiaceae, Huperzia, *Phlegmariurus*, *Lycopodium*, Lycopodiophyta

Introduction

The Lycopodiaceae is a globally distributed family of homosporous Lycopodiophytes in which the species exhibit shoot-forms associated with their habitat. Early classifications of this family usually included all of the species, irrespective of their shoot-form, together in the large and polymorphic genus *Lycopodium* L. One exception was the small and morphologically divergent Australian and New Zealand pygmy-clubmoss *Phylloglossum drummondii* Kunze which was historically placed in a genus of its own. Multiple genera and subfamilies corresponding with the different shoot-forms, gametophyte and spore types were recognised following multi-character systematic studies on the family (Bruce 1976, Holub 1964, Øllgaard 1975, 1979, 1987, 1989a, Wagner and Beitel 1992, Wilce 1972). Until recently, the most widely adopted of these classifications was the four-genus classification of Øllgaard (1987) which recognised *Lycopodium* L., *Lycopodiella* Holub, *Huperzia* Bernh. and *Phylloglossum* Kunze and was supported by a comprehensive nomenclatural index (Øllgaard 1989a).

Recent molecular phylogenetic investigations of the family and new morphological observations present a hypothesis that the relationship between *Phylloglossum drummondii* and *Huperzia* is equivocal and that the genus *Huperzia sensu* Øllgaard (1987) is paraphyletic or at best weakly supported (Christenhusz et al. 2011, Ji et al. 2008, Whittier 2006, Whittier and Braggins 1992, 2000, Whittier and Storchova 2007, Wikström and Kenrick 1997, Wikström and Kenrick 2000, 2001, Wikström et al. 1999, Yatsentyuk et al. 2001). A monophyletic *Huperzia* Bernh. is obtained if *Phylloglossum drummondii* is included within it *sensu* Christenhusz et al. (2011). This classification produces a *Huperzia sens. lat.* that is morphologically heterogeneous and is not supported by synapomorphies that can be readily identified in the field. It also does not reflect the ancient divergence times between the Huperzioid clades of Lycopodiaceae (Wikström and Kenrick 2001).

An alternative classification is to circumscribe *Huperzia* Bernh. narrowly *sensu* Wagner & Beitel (1992) to include only the wholly terrestrial species with erect shoots bearing gemmae in sporophyll axils and spores that are triangular in polar view with concave lateral margins, truncate corners and foveolate-fossulate sculpture on both proximal and distal surfaces and to recognise a sister genus, *Phlegmariurus* Holub, that is broadened to include all Palaeotropical and Neotropical species with erect or pendulous sporophyllous shoots that lack gemmae and that have spores with convex lateral margins and foveolate-fossulate sculpture restricted to their distal surface. This circumscription of *Phlegmariurus* includes a broad spectrum of both epiphytic and non-epiphytic species primarily from the tropical and subtropical regions globally. The necessary generic combinations with *Phlegmariurus* Holub were recently proposed for the Neotropical species (Øllgaard 2012a, b) but many necessary combinations do not exist among the Palaeotropical species. We propose these transfers so that *Phlegmariurus* Holub may be considered monophyletic.

Species exhibiting the characteristic features of *Phlegmariurus* were identified from the examination of 121 type specimens (including images) for species previously com-

bined with *Lycopodium* L., *Huperzia* Holub and *Urostachys* Herter and from characters described in these species protologues. Species level relationships within Palaeotropical *Phlegmariurus* are poorly understood and their circumscriptions require a thorough molecular and morphological review. It is apparent that there are more species names than there are species, and following a review of type materials we propose a number of new synonyms for species we have studied closely. Molecular evidence suggests that form homoplasy is common, especially among tropical rainforest epiphytes (Wikström et al. 1999). This suggests that morphologically similar species may not always be closely related. We have taken a more conservative approach to synonymisation for the *P. phlegmaria* (L.) T.Sen & U.Sen species complex as we consider this to be complex that is rich in species rather than being a remarkably heterogeneous species.

Lecotypification of *Phlegmariurus phlegmaria* (L.) T.Sen & U.Sen

Epiphytic Lycopodiaceae were first discovered by European botanists in the East Indies in the late 1600s. Several species were described and illustrated in:

- Breyne (1678) *Exoticarum Plantarum Centuria Prima* (tab. 92 *n.v.*)
- Rheede et al. (1703) *Hortus Indicus Malabaricus* XII (p. 27, tab. 14!)
- Rumph (1741) *Herbarium Amboinense* (VI p. 91, tab. 41, fig. 1!)
- Dillen (1741) *Historia Muscorum* (p. 450 tab. 61 fig 5, A, B & C.!)
- Dillen (1741) *Historia Muscorum* (p. 450 tab. 61 fig 5, D & E.!)
- Linné (1743) *Flora Zeylanica* number 386 (P. Hermann herb. vol. 4. p. 5!)

Linné described *Lycopodium phlegmaria* in *Species Plantarum* in 1753 and cited Dillen (1741 p. 450 tab. 61 fig 5), Linné (1743 p. 183 no. 386 & P. Hermann specimen vol. 4 p. 5), Breyne (1678 tab. 92), and Rheede et al. (1703p. 27, tab. 14) in his protologue. Based on the limited material available, Linné obviously regarded all of these illustrations, and the P. Hermann specimen, as belonging to the same species. His brief description could be applied to almost any heterophyllous epiphytic species in the genus *Phlegmariurus*. Subsequently, the figures and P. Hermann specimen cited by Linné have been recognised as representing multiple species. In accordance with ICBN (2006) Div. 2, Chapt. 2, Sect. 2 Art. 9.9 a lectotype may be selected to restrict the type of the taxon *L. phlegmaria* L. to one species (McNeill et al. 2006).

Øllgaard (1989) indicated that Dillen tab. 61 fig. 5 A, B & C was eligible for selection as lectotype but did not designate it. The illustrations of Dillen tab. 61 fig. 5 ABCDE are based on two separate illustrations reproduced from earlier publications. Dillen tab. 61 fig. 5. A, B & C is reproduced from Rheede et al. (1703 XII p. 27, tab. 14) but Dillen tab. 61 fig. 5. D & E is reproduced from Breyne (1678 tab. 92). In 1810, Willdenow described *L. mirabilis* (Willd.) Holub for Dillen tab. 61 fig. 5 D & E (i.e. the Breyne illustration) but retained the reference to Dillen tab. 61 fig. 5 A, B & C (i.e. the Rheede et al. illustration) for *L. phlegmaria* L. even though the epithet

phlegmaria was introduced by Breyne (1678). In 1832, *Lycopodium phyllanthum* Hook. & Arn. was described from new material (Pacific origin) which is in our opinion conspecific with the *P. Hermann* specimen (Indo-Asian origin). In the interest of conserving nomenclatural stability we believe that Dillen fig. 5, A, B & C. (1741) is the most suitable lectotype because it exhibits characters present in the diagnosis (in accordance with ICBN 2006 Div. 2, Chap. 2, Sect. 2, Art. 9.12.) and most closely accords with *L. phlegmaria* as it is regarded today (in accordance with ICBN 2006 Div. 2, Chapt. 2, Sect. 2 Art. 9 Recommendation 9.A.5.y) (McNeill et al. 2006).

Taxonomy

- Phlegmariurus afromontanus* (Pic.Serm.) A.R.Field & Bostock comb. nov.** Basionym: *Huperzia afromontana* Pic.Serm., *Webbia* 27:394. 1972. Type: Burundi. *J.Lewalle* 3468 (holo: FI! [FI3002]). IPNI ID: [urn:lsid:ipni.org:names:77125024-1](http://www.ipni.org/urn:lsid:ipni.org:names:77125024-1)
- P. aloifolius* (Hook. & Grev.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium aloifolium* Hook. & Grev., *Icon. Filic.* 2:233. 1831. Synonym: *Huperzia aloifolia* (Hook. & Grev.) Trevis., *Atti Soc. Ital. Sci. Nat.* 17: 248. 1874. Type: India. *N.Wallich* 129 (holo: K). IPNI ID: [urn:lsid:ipni.org:names:77125026-1](http://www.ipni.org/urn:lsid:ipni.org:names:77125026-1)
- P. balansae* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium balansae* Herter, *Bot. Jahrb. Syst.* 43: Beibl. 98:51. 1909. Synonym: *Huperzia balansae* (Herter) Holub, *Geobot. Phytotax.* 20(1): 71. 1985. Type: New Caledonia. *M.Balansa* 688 (syn: P! [P523007, P523008, P523009]); New Caledonia. *Pompéry s.n.* (syn: P! [P523010]). IPNI ID: [urn:lsid:ipni.org:names:77125028-1](http://www.ipni.org/urn:lsid:ipni.org:names:77125028-1)
- P. bampsianus* (Pic.Serm.) A.R.Field & Bostock comb. nov.** Basionym: *Huperzia bampsiana* Pic.Serm., *Bull. Jard. Bot. Natl. Belg.* 55(1-2): 193. 1985. Type: Rwanda. *J.P.Bamps* 2964 (holo: LG; iso: P! [P462093], FI! [FI3007]). IPNI ID: [urn:lsid:ipni.org:names:77125029-1](http://www.ipni.org/urn:lsid:ipni.org:names:77125029-1)
- P. banayanicus* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys banayanicus* Herter, *Bot. Arch.* 3:17. 1923. Synonym: *Huperzia banayanica* (Herter) Holub, *Geobot. Phytotax.* 20(1): 71. 1985. Type: Philippines. *H.M.Curran* 8003 (syn: P! [P5239029]); Philippines. *E.B.Copeland* 1450 (syn: P! [P523926]); Philippines. *A.D.Elmer* 9498 (syn: P! [P523019]); Philippines. *F.W.Foxworthy* 2449 (syn: P! [P523018]). IPNI ID: [urn:lsid:ipni.org:names:77125031-1](http://www.ipni.org/urn:lsid:ipni.org:names:77125031-1)
- P. bolanicus* (Rosenst.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium bolanicum* Rosenst., *Repert. Spec. Nov. Regni Veg.* 12:181 1913. Synonym: *Huperzia bolanica* (Rosenst.) Holub, *Geobot. Phytotax.* 20(1): 71. 1985. Type: Papua New Guinea. *C.Keysser* B32. Heterotypic synonyms: *Urostachys kaysseri* Herter ex Nessel, *Revista Sudamer. Bot.* 6:156. 1940; *Huperzia kaysseri* (Herter ex Nessel) Holub *Folia Geobot. Phytotax.* 20(1): 74. 1985. Type: New Guinea. *C.Keysser s.n.* (holo: B [B112944]). IPNI ID: [urn:lsid:ipni.org:names:77125033-1](http://www.ipni.org/urn:lsid:ipni.org:names:77125033-1)
- P. brachystachys* (Baker) A.R.Field & Bostock comb. nov.** Basionym: *L. dacrydioides* Baker. var. *brachystachys* Baker, *Handb. Fern-Allies* 18. 1887. Synonym: *Huperzia*

brachystachys (Baker) Pic.Serm., Webbia 23: 162. 1968. Type: Cameroon. *G.Mann* 2041(holo: K!). IPNI ID: urn:lsid:ipni.org:names:77125034-1

***P. brassii* (Copel.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium brassii* Copel., J. Arnold Arbor. 10:174 1929. Synonym: *Huperzia brassii* (Copel.) Holub, Geobot. Phytotax. 20(1): 71. 1985. Type: Papua New Guinea. *L.J.Brass* 1521 (holo: UC! [UC377989], iso: BRI! [AQ521250]). IPNI ID: urn:lsid:ipni.org:names:77125036-1

***P. cancellatus* (Spring) Ching, Acta Bot. Yunn. 4:122. 1982.** Basionym: *Lycopodium cancellatum* Spring, Mém. Acad. Roy. Sci. Belg. 24: 27. 1849. Type: Bhutan. *W.Griffith* 162 (holo: K).

***P. carinatus* (Desv. ex Poir.) Ching, Acta Bot. Yunn. 4:120. 1982.** Basionym: *Lycopodium carinatum* Desv. ex Poir., Encycl. suppl. 3:555 1813. Synonyms: *Huperzia carinata* (Desv. ex Poir.) Trevis., Atti Soc. Ital. Sci. Nat. 17(2) 1874. Type: Sri Lanka. *Jussieu* 639 (holo: P!, iso: B!). Heterotypic synonyms: *Lycopodium acrostachyum* Hook. & Grev., Icon Filic. 2:t 181 (1831). Type: Singapore, *N.Wallich* 117 (holo: P!). *Lycopodium albescens* Bailey, Queensl. Dept. Agric. Brisbane Bot. Bull. 14:16. 1896; *Huperzia albescens* (F.M.Bailey) Holub, Geobot. Phytotax. 20(1): 70. 1985. Type: Australia ex New Guinea. *M.Sutter ex Capt. Michael s.n.* (holo: BRI! [AQ258306], iso: K) *Lycopodium laxum* C.Presl, Reliq. Haenk. 1:83. 1825; *Huperzia laxa* (C.Presl) Trevis., Atti Soc. Ital. Sci. Nat. 17: 247. 1874; *Phlegmariurus laxus* (C.Presl.) Satou, Hikobia 12(3):268. 1997. Type: Philippines. *Haenke s.n.* (iso: K). *Lycopodium pendulum* Roxb.; Calcutta J. Nat. Hist. 4. 472 (1844). Type: *C. Smith s.n.* from Amboina (lecto: BR *fide* Morton (1974) Contr. U.S. Natl. Herb. 38: 283-396.). *Lycopodium struthioloides* C.Presl, Reliq. Haenk. 1: 82. 1830; *Huperzia struthioloides* (C.Presl) Rothm., Feddes Repert. Spec. Nov. Regni Veg. 54: 61. 1944. Type: Philippines. *Haenke s.n.* (holo: PRC). *Lycopodium vanikorenses* Copel., J. Arnold. Arbor. 12:49. 1931; *Huperzia vanikorensis* (Copel.) Holub, Folia Geobot. Phytotax. 20:77. 1985. Type: Vanikoro [Vanuatu]. *S.F.Kajewski* 521 (holo: UC! [UC422661], iso: GH, K, MICH, MO! [MO22133], US).

***P. cavifolius* (C.Chr.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium cavifolium* C.Chr., Dansk Bot. Ark. 7:190. 1932. Synonym: *Huperzia cavifolia* (C.Chr.) Tardieu, Adansonia sér. 2, 10: 18. 1970. Type: Madagascar. *H.Perrier* 8273 (holo: BM, iso: P! [P46639], K! [K351220]). *Urostachys smithianus* Nessel, Repert. Spec. Nov. Regni Veg. 36:185. 1934; *Huperzia smithiana* (Nessel) Holub, Geobot. Phytotax. 20(1): 76. 1985. Type: Mauritius: *s.c. s.n.* (syn: BONN-Nessel). IPNI ID: urn:lsid:ipni.org:names:77125038-1

***P. coralium* (Spring) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium coralium* Spring in Miquel, Pl. Jungh. 3: 273. 1854. Synonym: *Huperzia coralium* (Spring) Holub, Folia Geobot. Phytotax. 20(1): 71. 1985. Type: Java [Indonesia]. *Junghuhn* 291 (holo: LG, iso: P). IPNI ID: urn:lsid:ipni.org:names:77125040-1

***P. creber* (Alderw.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium crebrum* Alderw., Bull. Jard. Bot. Buitenzorg ser. 2, 24:4. 1917. Synonym: *Huperzia crebra* (Alderw.) Holub, Geobot. Phytotax. 20(1) 71. 1985. Type: New

Guinea. *A.A.Pulle* 907 (syn: BM, BO, BONN, K, L, U). IPNI ID: [urn:lsid:ipni.org:names:77125042-1](https://nbn-resolving.org/urn:lsid:ipni.org:names:77125042-1)

***P. cryptomerinus* (Maxim.) Satou Hikobia 12 (3): 268. 1997.** Basionym: *Lycopodium cryptomerinum* Maxim., Bull. Acad. Sci. St.Petersb. 15: 231. 1870. Synonym: *Huperzia cryptomerina* (Maxim) R.D.Dixit, J. Bombay Nat. Hist. Soc. 77(3): 541. 1980 [1981]. Type: Japan. *Maximowicz s.n.*

***P. cunninghamioides* (Hayata) Ching, Acta Bot. Yunnan. 4(2): 120. 1982.** Basionym: *Lycopodium cunninghamioides* Hayata, Ic. pl. formos. 4: 131. 1914. Synonym: *Huperzia cunninghamioides* (Hayata) Holub, Geobot. Phytotax. 20(1): 72. 1985. Type: Taiwan. *T.Soma 1* (holo: TI).

***P. curiosus* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys curiosus* Herter, Notul. Syst. 15:355. 1958. Synonym: *Huperzia curiosa* (Herter) Tardieu, Adansonia sér. 2, 10: 18. 1970. Type: Madagascar. *H.Humbert 23478* (holo: P! [P46637]). IPNI ID: [urn:lsid:ipni.org:names:77125044-1](https://nbn-resolving.org/urn:lsid:ipni.org:names:77125044-1)

***P. dacrydioides* (Baker) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium dacrydioides* Baker, Handb. fern-allies 17-18. 1887. Synonyms: *Huperzia dacrydioides* (Baker) Pic.Serm., Webbia 23: 162. 1968. 1968. Type: Natal. *J.Buchanan s.n.* (lecto: K! [K351207] designated by Pichi Sermolli 1986: 7). IPNI ID: [urn:lsid:ipni.org:names:77125045-1](https://nbn-resolving.org/urn:lsid:ipni.org:names:77125045-1)

***P. dalhousieanus* (Spring) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium dalhousieanus* Spring, Mem. Acad. Roy. Belg. 24: 25. 1849 Synonym: *Huperzia dalhousieana* (Spring) Trevis., Atti Soc. Ital. Sci. Nat. 17(2) 1874. Type: Penang [Malaysia]. *Lady Dalhousie 36* (holo: K! [3960/59]). Heterotypic synonyms: Based on a morphological comparison of living and herbarium specimens from Indonesia, Malaysia, Papua New Guinea, Australia and Fiji we consider the following taxa to belong to the same widespread but extremely scarce species: *Lycopodium caudifolium* Alderw., Bull. Jard. Bot. Buitenzorg, ser. 2, 1:14. 1911; *Urostachys caudifolius* (Alderw.) Herter ex Nessel, Bärlappgewächse 185. 1939; *Huperzia caudifolia* (Alderw.) Holub, Folia Geobot. Phytotax. 20(1): 71. 1985. Type: Borneo [Malaysia]. *A.W.Niewenhuis 317* (holo: BO! [BO185337], iso: L). *Lycopodium clarae* Bailey, Queensl. Dept. Agric. Brisbane Bot. Bull. 7. 1893; *Urostachys clarae* (F.M.Bailey) Herter ex Nessel, Bärlappgewächse 185. 1939; *Huperzia clarae* (F.M.Bailey) Holub, Geobot. Phytotax. 20(1): 71. 1985. Type: Australia. *E.Cowley 29* (holo: BRI! [AQ24829]). *Lycopodium glaucum* Cesati, Ann. Acc. Sc. Fis. et. Mat. Napoli VII, 35 (1876); *Urostachys glaucus* (Cesati) Herter, Revista Sudamer. Bot. 8: 86 (1949); Type: Malaysia. *O.Beccari* (holo: FI! [FI11821]). *Lycopodium magnificum* Brownlie, Nova Hedwigia Beih., 55 (Pterid. Fl. Fiji) 22. 1977; *Huperzia magnifica* (Brownlie) Holub, Folia Geobot. Phytotax. 26(1): 92. 1991. Type: Fiji. *Fiji Dept. Agr. 18070* (holo: CHR! [CHR341159]). *Lycopodium ingens* Gepp ex Nessel, Bärlappgewächse 185 (1939) nom. nud.; Type: Sogori, New Guinea. *H.O.Forbes s.n.* (holo?: BM! [BM1038045]). IPNI ID: [urn:lsid:ipni.org:names:77125047-1](https://nbn-resolving.org/urn:lsid:ipni.org:names:77125047-1)

- P. delbrueckii* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys delbrueckii* Herter, Bot. Arch. 3:19. 1923. Synonyms: *Huperzia delbrueckii* (Herter) Holub, Geobot. Phytotax. 20(1): 72. 1985. Type: Philippines. *E.A.Mearns & W.J.Hutchinson* 4654 (holo: NY! [NY127344], iso: MICH! [MICH1191095], P! [P01220906, P01220907], US! [US134352]). IPNI ID: urn:lsid:ipni.org:names:77125049-1
- P. dielsii* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium dielsii* Herter, Bot. Jahrb. Syst. 54:229. 1916. Synonym: *Huperzia dielsii* (Herter) Holub, Geobot. Phytotax. 20(1): 72. 1985. Type: New Guinea. *Ledermann* 11318 (syn: B, BM); *R.Schlechter* 19085 (syn: B! [B2112382] BONN-Nessel). IPNI ID: urn:lsid:ipni.org:names:77125051-1
- P. durus* (Pic.Serm.) A.R.Field & Bostock comb. nov.** Basionym: *Huperzia dura* Pic. Serm., Webbia 27: 392. 1973. Type: Kenya. *R.B.Faden* et al. 70/180 (holo: FI! [FI3008], iso: EA! [EA2516, EA2517], iso: K! [K351206]). IPNI ID: urn:lsid:ipni.org:names:77125052-1
- P. ellenbeckii* (Nessel) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys ellenbeckii* Nessel, Repert. Spec. Nov. Regni Veg. 36:188, t. 175. 1934. Synonym: *Huperzia ellenbeckii* (Nessel) Pic.Serm., Webbia 23: 162. 1968. Type: Ethiopia. *Ellenbeck s.n.* (lecto: BONN-Nessel 544 p.p. designated by Pichi Sermolli 1968: 162). IPNI ID: urn:lsid:ipni.org:names:77125054-1
- P. elmeri* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys elmeri* Herter, Bot. Arch. 3:16. 1923. Synonym: *Huperzia elmeri* (Herter) Holub, Geobot. Phytotax. 20(1): 72. 1985. Type: Philippines. *A.D.Elmer* 6411 (isosyn: P! [P01220901]); *J.Bermejos* 372 (isosyn: P! [P01220903]); *H.M.Curran* 3906 (isosyn: P! [P01220905]); *E.D.Merrill* 5923 (isosyn: P! [P01220902]). IPNI ID: urn:lsid:ipni.org:names:77125056-1
- P. fargesii* (Herter) Ching, Acta Bot. Yunn. 4:125. 1982.** Basionym: *Lycopodium fargesii* Herter, Bot. Jahrb. Syst. 43: Beibl. 98: 48. 1909. Synonyms: *Huperzia fargesii* (Herter) Holub, Folia Geobot. Phytotax. 20(1): 72. 1985; *Urostachys fargesii* (Herter) Herter ex Nessel, Bärlappgewächse 137. 1939. Type: China. *P.G.Farges s.n.* (holo: P! [P01234387], iso: MO! [MO255690]).
- P. filiformis* (Sw.) W.H.Wagner, Contr. Univ. Michigan Herb. 20:242. 1995.** Basionym: *Lycopodium filiforme* Sw., J. Bot. (Schrader) 2: 114. 1800 [1801]; Synonyms: *Urostachys filiformis* (Sw.) Herter, Index. Lyc. 61. 1949; *Huperzia filiformis* (Sw.) Holub, Folia Geobot. Phytotax 20:72 (1985); Type: “Insulae Sandwich oceanici” [Tahiti] in Syn. Fil. 1806. Heterotypic synonyms: *Lycopodium setaceum* Lam., Encycl. (Lamarck) 3(2): 653. 1792. *Huperzia setacea* (Hamilt. ex D. Don) Trevis., Atti Soc. Ital. Sci. Nat. 17:248. 1874. Type: Réunion. *Commerson s.n.* (holo: P! [P46612], iso: P! [P583966]). *Lycopodium polytrichoides* Kaulf., Enum. Filic. 6. 1824; *Huperzia polytrichoides* (Kaulf.) Trevis., Atti Soc. Ital. Sci. Nat. 17(2) 1874. Type: Sandwich Islands [Hawaii], *Chamisso s.n.* (lecto: B designated by Nessel 1939: 30). *Lycopodium verticillatum* L.f., Suppl. pl. 448. 1782; *Huperzia ver-*

ticillata (L.f.) Rothm., Feddes Repert. Spec. Nov. Regni Veg. 54: 60. 1944. Type: Réunion. *P.Sonnerat per A.Thouin* (holo: SBT! [SBT12294]).

***P. flagellaceus* (Kuhn) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium flagellaceum* Kuhn, Forschungsr. Gazelle 4:15. 1889. Synonym: *Huperzia flagellacea* (Kuhn) Holub, Geobot. Phytotax. 20(1): 72. 1985. Type: New Guinea. *Nauman s.n.* (holo: B! [B112446], iso: BM). Note: Some authors have considered this taxon to share affinities with *P. varius* but we consider that it is closer to *P. brassii* (Copel.) A.R.Field & Bostock and the relationship between the two needs investigating. IPNI ID: [urn:lsid:ipni.org:names:77125058-1](http://www.ipni.org:urn:lsid:ipni.org:names:77125058-1)

***P. foliosus* (Copel.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium foliosum* Copel., Bernice P. Bishop Mus. Bull. 59:7, t.1. 1929. Synonym: *Huperzia foliosa* (Copel.) Holub, Geobot. Phytotax. 20(1): 72. 1985. Type: *H.E.Parks 20651* (holo: UC! [UC351029], iso: BISH! [BISH1000366]). IPNI ID: [urn:lsid:ipni.org:names:77125060-1](http://www.ipni.org:urn:lsid:ipni.org:names:77125060-1)

***P. fordii* (Baker) Ching, Acta Bot. Yunn. 4:126. 1982.** Basionym: *Lycopodium fordii* Baker, Handb. Fern-Allies 17. 1887. Synonym: *Huperzia fordii* (Baker) R.D.Dixit Census Indian Pteridophytes 7. 1984. Type: China. *Ford 4* (holo: K).

***P. gagnepainianus* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys gagnepainianus* Herter, Revista Sudamer. Bot. 8:23. 1949. Synonym: *Huperzia gagnepainiana* (Herter) Tardieu, Adansonia sér. 2, 10: 18. 1970. Type: Madagascar. *H.Perrier 15405* (lecto: P! [P226738] designated by Tardieu (1971: 20). IPNI ID: [urn:lsid:ipni.org:names:77125062-1](http://www.ipni.org:urn:lsid:ipni.org:names:77125062-1)

***P. giganteus* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys giganteus* Herter ex Nessel, Bärlappgewächse 124. 1939. Synonym: *Huperzia gigantea* (Herter) Holub, Geobot. Phytotax. 20(1): 73. 1985. Type: Philippines. *E.A.Mearns & Hutchinson 1277* (iso: ?); New Guinea. *MacGregor 3945* (iso: ?). IPNI ID: [urn:lsid:ipni.org:names:77125064-1](http://www.ipni.org:urn:lsid:ipni.org:names:77125064-1)

***P. gnidioides* (L.f.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium gnidioides* L.f., Suppl. pl. 448. 1782. Synonym: *Huperzia gnidioides* (L.f) Trevis., Atti Soc. Ital. Sci. Nat. 17:247. 1874. Type: Mauritius. *P.Sonnerat per A.Thouin s.n.* (holo: P). Heterotypic synonyms: *Urostachys helmii* Nessel, Repert. Spec. Nov. Regni Veg. 36:186. 1934; *Huperzia helmii* (Nessel) Holub, Geobot. Phytotax. 20(1): 73. 1985. Type: “Insel Greymouth 1885” (lecto: BONN-Nessel designated Øllgaard 1989: 92). IPNI ID: [urn:lsid:ipni.org:names:77125065-1](http://www.ipni.org:urn:lsid:ipni.org:names:77125065-1)

***P. goebelii* (Nessel) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys goebelii* Nessel, Repert. Spec. Nov. Regni Veg. 36:188, t.175. 1934. Synonym: *Huperzia goebelii* (Nessel) Holub, Geobot. Phytotax. 20(1): 73. 1985. Type: West-Sumatra [Indonesia] *Goebel s.n.* (isosyn: UC! [UC413367], BONN-Nessel!); Kwala Relai [Malaysia]. *M.Haniff & M.Nur 10225* (isosyn: BM! [BM1038044]). Heterotypic synonyms: *Urostachys heroldii* Herter ex Nessel, Revista Sudamer. Bot. 6:167. 1940. Synonym: *Huperzia heroldii* (Nessel) Holub, Geobot. Phytotax. 20(1): 73. 1985. Type: Borneo [Malaysia]. *Hallier* (holo: P?). IPNI ID: [urn:lsid:ipni.org:names:77125067-1](http://www.ipni.org:urn:lsid:ipni.org:names:77125067-1)

- P. guandongensis* Ching, Acta Bot. Yunnan. 4(2):123. 1982. Type: China. *S.P.Ko* 51291 (holo: PE).
- P. gunturensis* (Alderw.) A.R.Field & Bostock comb. nov. Basionym: *Lycopodium gunturens* Alderw., Bull. Jard. Bot. Buitenzorg ser. 2, 1:14. 1911. Synonym: *Huperzia gunturensis* (Alderw.) Holub, Folia Geobot. Phytotax. 20(1): 73. 1985. Type: Indonesia. *A.E.Kerkhoven* 15 (holo: BO [BO1826257]). IPNI ID: urn:lsid:ipni.org:names:77125069-1
- P. hamiltonii* (Spreng.) Á.Löve & D.Löve, Taxon 26(2-3):324. 1977. Basionym: *Lycopodium hamiltonii* Spreng., Syst. veg. 5: 429. 1828. Type: Nepal. *J.Buchanan* s.n. (holo: BM).
- P. harmsii* (Nessel) A.R.Field & Bostock comb. nov. Basionym: *Urostachys harmsii* Herter ex Nessel, Revista Sudamer. Bot. 6: 166. 1940. Synonym: *Huperzia harmsii* (Herter ex Nessel) Holub, Geobot. Phytotax. 20(1): 73. 1985. Type: Caroline Islands [Micronesia] *R.Kanehira* 1316 (iso: NY! [NY127353], US [US1917849]). IPNI ID: urn:lsid:ipni.org:names:77125071-1
- P. hellwigii* (Warb.) A.R.Field & Bostock comb. nov. Basionym: *Lycopodium hellwigii* Warb., Monsunia, 1:97. 1898. Synonym: *Huperzia hellwigii* (O.Warb.) Holub, Geobot. Phytotax. 20(1): 73. 1985. Type: Papua New Guinea. *F.Hellwig* 349 (holo: B! [B112544], iso: BONN-Nessel). IPNI ID: urn:lsid:ipni.org:names:77125073-1
- P. henryi* (Baker) Ching, Acta Bot. Yunnan. 4(2):125. 1982. Basionym: *Lycopodium henryi* Baker, Kew Bull. 1906:15. 1906. Type: China. *Henry* 11551 (holo: K).
- P. hillianus* (Nessel) A.R.Field & Bostock comb. nov. Basionym: *Urostachys hillianus* Nessel, Repert. Spec. Nov. Regni Veg. 36:16. 1934. Synonym: *Huperzia hilliana* (Nessel) Holub, Geobot. Phytotax. 20(1): 73. 1985. Type: India. *H.C.Levinge* s.n. (holo: K, iso: BONN-Nessel). IPNI ID: urn:lsid:ipni.org:names:77125075-1
- P. holstii* (Hieron.) A.R.Field & Bostock comb. nov. Basionym: *Lycopodium holstii* Hieron. in Engler, Pflanzenw. Ost-Afrikas C:90. 1985. Synonyms: *Huperzia holstii* (Hieron.) Pic.Serm., Webbia 23: 163. 1968. Type: Usambara [Tanzania]. *C.Holst* 8814 (holo: B! [B112586], iso: K! [K351205], P! [P466630], BM! [BM785226]). IPNI ID: urn:lsid:ipni.org:names:77125077-1
- P. horizontalis* (Nessel) A.R.Field & Bostock comb. nov. Basionym: *Urostachys horizontalis* Nessel, Bärlappgewächse 225. 1939. Synonym: *Huperzia horizontalis* (Herter ex Nessel) Holub, Geobot. Phytotax. 20(1): 73. 1985. Type: Borneo [Malaysia]. *A.W.Niewenhuis* 311 (iso: L! [L57351], BONN-Nessel). IPNI ID: urn:lsid:ipni.org:names:77125079-1
- P. humbertii* (Nessel) A.R.Field & Bostock comb. nov. Basionym: *Urostachys humbertii* Nessel, Repert. Sp. Nov. Regni Veg. 48:170. 1940. Type: Madagascar. *J.Kiese* s.n. (holo: BONN-Nessel). IPNI ID: urn:lsid:ipni.org:names:77125546-1
- P. humbertii-henrici* (Herter) A.R.Field & Bostock comb. nov. Basionym: *Urostachys humbertii-henrici* Herter, Revista Sudamer. Bot. 8:23. 1949. Synonym: *Huperzia humbertii-henrici* (Herter) Tardieu, Adansonia sér. 2, 10: 18. 1970. Type: Madagascar. *H.Humbert* 12224 (isolecto: P! [P466628, P466627, P466629] designated by Tardieu 1971: 29). IPNI ID: urn:lsid:ipni.org:names:77125081-1

- P. jaegeri* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys jaegeri* Herter, *Revista Sudamer. Bot.* 8:24. 1949. Synonym: *Huperzia jaegeri* (Herter) Pic.Serm., *Webbia* 23: 163. 1968. Type: Sierra Leone. *Jaeger* 1522 (holo: P! [P466622]). IPNI ID: [urn:lsid:ipni.org:names:77125083-1](http://www.ipni.org:urn:lsid:ipni.org:names:77125083-1)
- P. juniperistachyus* (Hayata) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium juniperistachyum* Hayata, *Ik. Pl. Formos.* 4:132. 1914. Synonym: *Huperzia juniperistachya* (Hayata) Holub, *Geobot. Phytotax.* 20(1): 74. 1985. Type: Taiwan. *Kawakami & Nakahara* 787 (holo: TI). IPNI ID: [urn:lsid:ipni.org:names:77125085-1](http://www.ipni.org:urn:lsid:ipni.org:names:77125085-1)
- P. lauterbachii* (E.Pritz. ex Schumann & Lauterb.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium lauterbachii* E.Pritz. ex Schumann & Lauterb., *Südsee* 149. 1900. Synonym: *Huperzia lauterbachii* (E.Pritz.) Holub, *Geobot. Phytotax.* 20(1): 74. 1985. Type: New Guinea. *C.A.G.Lauterbach* 3174 (holo: B, iso: BONN-Nessel). IPNI ID: [urn:lsid:ipni.org:names:77125087-1](http://www.ipni.org:urn:lsid:ipni.org:names:77125087-1)
- P. lecomteanus* (Nessel) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys lecomteanus* Nessel, *Repert Spec. Nov. Regni Veg.* 36(12-15):187. 1934. Synonyms: *Huperzia lecomteana* (Nessel) Holub, *Geobot. Phytotax.* 20(1): 74. 1985. Type: Madagascar. (holo: BONN-Nessel 492). IPNI ID: [urn:lsid:ipni.org:names:77125089-1](http://www.ipni.org:urn:lsid:ipni.org:names:77125089-1)
- P. ledermannii* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium ledermannii* Herter, *Bot. Jahrb. Syst.* 54:232. 1916. Synonym: *Huperzia ledermannii* (Herter) Holub, *Geobot. Phytotax.* 20(1): 74. 1985. Type: New Guinea. *C.Keysser* 199 (iso: SUNIV!, B! [B113004]). IPNI ID: [urn:lsid:ipni.org:names:77125091-1](http://www.ipni.org:urn:lsid:ipni.org:names:77125091-1)
- P. lockyeri* (D.L.Jones & B.Gray), A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium lockyeri* D.L.Jones & B. Gray, *Austrobaileya* 2:126. 1985. Synonym: *Huperzia lockyeri* (D.L.Jones & B.Gray) Holub, *Geobot. Phytotax.* 26(1): 92. 1991. Type: Australia *B.Gray* 3541 (holo: QRS! [QRS77021]). IPNI ID: [urn:lsid:ipni.org:names:77125092-1](http://www.ipni.org:urn:lsid:ipni.org:names:77125092-1)
- P. longus* (Copel.), A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium longum* Copel., *Philipp. J. Sci.* 60:100, t.3. 1936. Type: Solomon Islands. *S.F.Kajewski* 1953 (holo: PHN destroyed, iso: BM! [BM16725], MICH! [MICH1287171]). IPNI ID: [urn:lsid:ipni.org:names:77125094-1](http://www.ipni.org:urn:lsid:ipni.org:names:77125094-1)
- P. lonyangensis* C.Y.Ma, Bull. Bot. Res., Harbin 10(3):58. 1990.** Type: China *C.Y.Ma* 3246 (holo: AMMS).
- P. macgregorii* (Baker) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium macgregorii* Baker, *J. Bot.* 28: 109. 1890. Synonym: *Huperzia macgregorii* (Baker) Holub, *Geobot. Phytotax.* 20(1): 74. 1985. Type: New Guinea. *W.MacGregor* 68 (holo: K!, iso: BM! [BM1038027, BM1038028]). Heterotypic synonyms: *Lycopodium versteegii* Alderw., *Bull. Jard. Bot. Buitenzorg*, ser. 2, 24:4. 1917; *Huperzia versteegii* (Alderw.) Holub, *Geobot. Phytotax.* 20(1): 77. 1985. Type: (holo: New Guinea. *G.M.Vertseeg* 2510 (holo: U! [U7449]). *Urostachys whartoniensis* Nessel, *Repert. Spec. Nov. Regni Veg.* 38:62. 1935. *Huperzia whartoniensis* (Nessel) Holub, *Geobot. Phytotax.* 20(1): 78. 1985. Type: Papua New Guinea. *L.J.Brass*

4729 (iso: NY! [NY127367], iso: BRI! [AQ24833]). IPNI ID: urn:lsid:ipni.org:names:77125096-1

***P. macrostachys* (Hook. ex Spring) N.C.Nair & S.R.Ghosh, J. Econ. Taxon. Bot. 12(1):194. 1988.** Synonyms: *Huperzia macrostachys* (Hook. ex Spring) Holub, Geobot. Phytotax. 20(1): 74. 1985. Type: India. *F.Adams* s.n. (syn: K). Sri Lanka. *Walker* s.n. (syn: K).

***P. mannii* (Hillebr.) W.H.Wagner, Contr. Univ. Michigan Herb. 20:241 1995.** Basionym: *Lycopodium phlegmaria* var. *mannii* Hillebr., Fl. Hawaiian Isl. 645. 1888. Type: Hawaii. *H.Mann & W.T.Brigham* 506 (iso: BISH! [BISH1005485], MO! [MO22681]).

***P. marsupiiformis* (D.L.Jones & B.Gray) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium marsupiiforme* D.L.Jones & B.Gray, Austrobaileya 2:128. 1985. Synonym: *Huperzia marsupiiformis* (D.L.Jones & B.Gray) Holub, Geobot. Phytotax. 26(1): 92. 1991. Type: Australia. *B.Gray* 3841 (holo: BRI! [AQ419317], CNS! [QRS78343]). IPNI ID: urn:lsid:ipni.org:names:77125098-1

***P. megastachyus* (Baker) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium megastachyum* Baker, J. Linn. Soc. Bot. 21:454. 1885. Synonym: *Huperzia megastachya* (Baker) Tardieu, Adansonia sér. 2, 10: 18. 1970. Type: Madagascar. *R.Baron* 2840 (holo: K! [K351218, K351219]). IPNI ID: urn:lsid:ipni.org:names:77125100-1

***P. merrillii* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys merrillii* Herter, Bot. Arch. 3:15. 1923. Synonym: *Huperzia merrillii* (Herter) Holub, Geobot. Phytotax. 20(1): 74. 1985. Type: Philippines. *E.D.Merrill* 965 (iso: UC! [UC1096474], U! [U7444], MICH! [MICH1191096]). IPNI ID: urn:lsid:ipni.org:names:77125103-1

***P. milbraedii* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium milbraedii* Herter, Hedwigia 49:90. 1909. Synonym: *Huperzia milbraedii* (Herter) Pic.Serm., Webbia 23:163. 1968. Type: Cameroon. *Milbraed* 3449 (holo: B). IPNI ID: urn:lsid:ipni.org:names:77125104-1

***P. mingcheensis* Ching, Acta Bot. Yunnan. 4(2): 125. 1982.** Synonym: *Huperzia mingcheensis* (Ching) Holub, Folia Geobot. Phytotax. 20: 74. 1985. Type: China. *P.S.Chiou* 2069 (holo: PE). See recent note on the nomenclature of this species (Zhang 2012).

***P. minutifolius* (Alderw.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium coralium* var. *minutifolium* Alderw., Malayan fern allies 44. 1915. Synonyms: *Huperzia minutifolia* (Alderw.) Holub, Folia Geobot. Phytotax 20(1): 74. 1985. Type: New Guinea. *Ruchmats* s.n. (holo: L). IPNI ID: urn:lsid:ipni.org:names:77125106-1

***P. multifarius* (Alderw.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium multifarium* Alderw., Bull. Jard. Bot. Buitenzorg, ser. 3, 5:226. 1922. Synonym: *Huperzia multifaria* (Alderw.) Holub, Geobot. Phytotax. 20(1): 75. 1985. Type: Ternate [Moluccas, Indonesia]. *V.M.A.Beguin* 1329 (holo: BO [BO186327]). IPNI ID: urn:lsid:ipni.org:names:77125108-1

***P. myrtifolius* (G.Forst.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium myrtifolium* G.Forst., Florae Insulae Australiae Prodrum. 1786. Synonym: *Hu-*

- perzia myrtifolia* (G.Forst.) Holub, Geobot. Phytotax. 20(1): 75. 1985. Type: New Caledonia. *G.Forster s.n.* (iso: P-Luerss., UPS-Thunb). IPNI ID: [urn:lsid:ipni.org:names:77125109-1](https://nbn-resolving.org/urn:lsid:ipni.org:names:77125109-1)
- P. nanus* C.Y.Ma, Bull. Bot. Res., Harbin 10(3):58. 1990.** Type: China. *C.Y.Ma* 3274 (holo: AMMS).
- P. neocaledonicus* (Nessel) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys neocaledonicus* Nessel, Repert. Spec. Nov. Regni Veg. 36:187. 1934. Synonym: *Huperzia neocaledonica* (Nessel) Holub, Geobot. Phytotax. 20(1): 75. 1985. Type: New Caledonia. *E.Viellard* (lecto: BONN-Nessel designated Øllgaard 1989: 96). IPNI ID: [urn:lsid:ipni.org:names:77125110-1](https://nbn-resolving.org/urn:lsid:ipni.org:names:77125110-1)
- P. nilagiricus* (Spring) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium nilagiricum* Spring, Bull. Acad. Roy. Sci. Belg. 8:517. 1841. Synonym: *Huperzia nilagirica* (Spring) Dixit, J. Bombay Nat. Hist. Soc. 77(3):541. 1981. Type: India. *Perottet* (holo: G-Deless.). IPNI ID: [urn:lsid:ipni.org:names:77125112-1](https://nbn-resolving.org/urn:lsid:ipni.org:names:77125112-1)
- P. nummulariifolius* (Blume) Ching, Acta Bot. Yunnan. 4(2):125. 1982.** Basionym: *Lycopodium nummulariifolium* Blume, Enum. pl. Javae 2: 263. 1828. Synonym: *Huperzia nummulariifolia* (Blume) Chambers, Jermy & Crabbe, Brit. Fern Gaz. 10: 176. 1971. Type: Java. *C.L.Blume s.n.* (isolecto: L! [L57363]).
- P. nutans* (Brack.) W.H.Wagner Contr. Univ. Michigan Herb. 20:241. 1995.** Synonym: *Huperzia nutans* (Brack.) Rothm., Feddes Repert. 54: 62. 1944. Type: Hawaii. *Wilkes 10* (holo: US, iso: BISH! [BISH1005484]).
- P. nylamensis* (Ching & S.K.Wu) H.S.Kung & Li Bing Zhang, Acta Phytotax. Sin. 37(1):52. 1999.**
- P. obtusifolius* (P.Beauv.) A.R.Field & Bostock comb. nov.** Basionym: *Lepidotis obtusifolia* P.Beauv., Prodr. Aethéogam. 109. 1805. Synonym: *Huperzia obtusifolia* (P.Beauv.) Rothm., Feddes Repert. 54:61. 1944. Type: Réunion. *J.B.G.M. Bory de St. Vincent* (holo: P! [P466623], iso: B-Wild.! [B-W19344]). Heterotypic synonyms: *Lycopodium pachyphyllum* Kuhn ex Herter, Bot. Jahrb. Syst. 43: Beibl. 98:51. 1909; *Huperzia pachyphylla* (Kuhn) Holub, Geobot. Phytotax. 20(1): 75. 1985. Type: Madagascar. *J.M.Hildebrandt* 4141 (holo: B! [B85521], iso: B! [B8522], P! [P466624, P466625, P466626]). IPNI ID: [urn:lsid:ipni.org:names:77125167-1](https://nbn-resolving.org/urn:lsid:ipni.org:names:77125167-1)
- P. oceanianus* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium oceanianum* Herter, Bot. Jahrb. Syst. 43: Beibl. 98:52. 1909. Synonym: *Huperzia oceaniana* (Herter) Holub, Folia Geobot. Phytotax. 20:75. 1985. Type: New Hebrides [Vanuatu] *s.c. s.n.* (syn: P). IPNI ID: [urn:lsid:ipni.org:names:77125114-1](https://nbn-resolving.org/urn:lsid:ipni.org:names:77125114-1)
- P. oltmannsii* (Herter ex Nessel) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys oltmannsii* Herter ex Nessel [Bärlappgewächse 231. 1939, nom. inval.] Revista Sudamer. Bot. 6: 168. 1940. Synonym: *Huperzia oltmannsii* (Herter ex Nessel) Holub, Geobot. Phytotax. 20(1): 75. 1985. Type: Tahiti. *J.McGillivray* 1331. IPNI ID: [urn:lsid:ipni.org:names:77125115-1](https://nbn-resolving.org/urn:lsid:ipni.org:names:77125115-1)
- P. ophioglossoides* (Lam.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium ophioglossoides* Lam., Encycl. (Lamarck) 3:646. 1789. Synonym: *Huperzia ophioglossoides* (Lam.) Rothm., Feddes Repert. 54:62. 1944. Type: Mauritius. *Commer-*

son s.n. (holo: P-Lam). Note: Molecular phylogenetic evidence indicates that this Palaeotropic species belongs to a Neotropical radiation of *Phlegmariurus*. IPNI ID: urn:lsid:ipni.org:names:77125118-1

***P. ovatifolius* (Ching) W.M.Chu ex H.S.Kung & Li Bing Zhang, Acta Phytotax. Sin. 37(1):52 (1999).** Basionym: *Huperzia ovatifolia* Ching, Acta Bot. Yunnanica 3: 298. 1981. Type: China. *Yunnan Complex Exped. 1504* (holo: PE).

***P. parksii* (Copel.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium parksii* Copel., Bernice P. Bishop. Mus. Bull. 59:8, t.2. 1929. Synonym: *Huperzia parksii* (Copel.) Holub, Geobot. Phytotax. 20(1): 75. 1985. Type: Fiji. *H.E.Parks 20584* (holo: UC! [UC351026], iso: P! [P711367], BISH! [BISH1000370], US! [US1759872]). IPNI ID: urn:lsid:ipni.org:names:77125120-1

***P. patentissimus* (Alderw.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium patentissimum* Alderw., Bull. Jard. Bot. Buitenzorg, ser. 2, 24:4. 1917. Synonym: *Huperzia patentissima* (Alderw.) Holub, Geobot. Phytotax. 20(1): 75. 1985. Type: Irian Jaya [Indonesia]. *A.A.Pulle 462* (holo: BO, iso: BM, BONN-Nessel, L! [L57365], U). IPNI ID: urn:lsid:ipni.org:names:77125121-1

***P. pecten* (Baker) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium pecten* Baker, J. Linn. Soc. Bot. 15:421. 1876. Synonym: *Huperzia pecten* (Baker) Tardieu, Adansonia sér. 2, 10: 18. 1970. Type: Madagascar. *W.Pool s.n.* (holo: K1 [K351214]). IPNI ID: urn:lsid:ipni.org:names:77125123-1

***P. perrertianus* (Tardieu) A.R.Field & Bostock comb. nov.** Basionym: *Huperzia perrieriana* Tardieu, Adansonia 10:20. 1970. Type: Madagascar. *H.Perrier 8294* (holo: P). IPNI ID: urn:lsid:ipni.org:names:77125127-1

***P. petiolatus* (C.B.Clarke) H.S.Kung & Li Bing Zhang, Acta Phytotax. Sin. 37(1): 52. 1999.** Basionym: *Lycopodium hamiltonii* var. *petiolatus* C.B.Clarke, Trans. Linn. Soc. London, ser. 2, Bot. 1: 590. 1880. Synonyms: *Huperzia petiolata* (C.B.Clarke) R.D.Dixit, J. Bombay Nat. Hist. Soc. 77(3): 541. 1980 [1981]. Type: Khasia [Bangladesh]. *C.B.Clarke s.n.* (holo: BM).

***P. phlegmaria* (L.) T.Sen & U.Sen, Fern. Gaz. 11(6):421. 1978.** Basionym: *Lycopodium phlegmaria* L., Species Plantarum 2. 1753. Synonym: *Huperzia phlegmaria* (L.) Rothm., Feddes Repert. 54: 62. 1944. Type: India. *s.c. s.n.* (lecto: Dillen (1741) *Historia Muscorum* p. 450 tab. 61 fig 5, A, B & C. **here designated**).

***P. phlegmarioides* (Gaudich.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium phlegmarioides* Gaudich., Voy. Uranie, Bot. 1830. Synonym: *Huperzia phlegmarioides* (Gaudich.) Rothm., Feddes Repert. Spec. Nov. Regni Veg. 54(1). 1944. Type: Moluccas [Indonesia] *C.-B.Gaudichaud s.n.* (holo: P!, iso: K!). Heterotypic synonyms: *Urostachys kandavuensis* Nessel, Repert. Spec. Nov. Regni Veg. 39:67. 1935; *Huperzia kandavuensis* (Nessel) Holub, Geobot. Phytotax. 20(1): 74. 1985. Type: Fiji. *A.C.Smith 142* (holo: NY! [NY127357]). *Lycopodium pseudophlegmaria* Kuhn, Forschungsr. Gazelle 4: 16. 1889; *Urostachys pseudophlegmaria* (Kuhn) Herter ex Nessel, Bärlappgewächse 237. 1939; *Huperzia pseudophlegmaria* (Kuhn) Holub, Folia Geobot. Phytotax. 20: 76. 1985; Type: *Naumann*, Fiji Islands (holo - unknown). *Lycopodium tetrapterygium* F.M.Bailey, Proc. Roy. Soc. Queensland 1:150 (1885); *Uro-*

stachys tetrapterygius (F.M.Bailey) Herter, Index Lyc. 86. 1949; Type: Daintree River, Australia *Fitzalan s.n.* (syn: BRI!) and Johnstone River, Australia *Kefford s.n.* (syn: BRI!). IPNI ID: urn:lsid:ipni.org:names:77125129-1

***P. phyllanthus* (Hook. & Arn.) R.D.Dixit J.** Bombay Nat. Hist. Soc. 77(3): 541. 1981. Synonyms: *Huperzia phyllantha* (Hook. & Arn.) Holub, Geobot. Phytotax. 20(1): 75. 1985. Type: Hawaiian Islands *G.T.Lay & A.Collie 3321* (holo: BM! [BM1038070]). Heterotypic synonyms: *Lycopodium pachystachyon* Spring, Bull. Acad. Roy. Sci. Belg. 8:518. 1841. *Huperzia pachystachyon* (Spring) Roth., Feddes Repert. 54:62. 1944. Type: Hawaii. *C.-B.Gaudichaud* (iso: BM, L! [L57364], P).

***P. pichianus* (Tardieu) A.R.Field & Bostock comb. nov.** Basionym: *Huperzia pichiana* Tardieu, Adansonia sér. 2, 10: 21, t. 2, f. 5-8. 1970. Type: Madagascar. *H.Perrier 17773* (holo: P! [P466620], iso: BM! [BM785232], P! [P466618, P466619, P226993]). IPNI ID: urn:lsid:ipni.org:names:77125134-1

***P. proliferus* (Blume) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium proliferum* Blume, Enum. Pl. Javae 2:265. 1828. Synonym: *Huperzia prolifera* (Blume) Trevis., Atti Soc. Ital. Sci. Nat. 17(2). 1874. Type: Java [Indonesia], *C.L.Blume s.n.* (lecto: L! [L57380], iso: P!). IPNI ID: urn:lsid:ipni.org:names:77125135-1

***P. pulcherrimus* (Wall. ex Hook. & Grev.) Á.Löve & D.Löve** Taxon 26(2-3): 324 (1977). Basionym: *Lycopodium pulcherrimum* Wall. ex Hook. & Grev. Icon. Filic. 1(2): 38. 1827. Synonyms: *Huperzia pulcherrima* (Wall. ex Hook. & Grev.) Pic. Serm. Type: Nepal *N. Wallich s.n.* (iso: BM! [BM1038025]).

***P. ribourtii* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium ribourtii* Herter, Bot. Jahrb. Syst. 43: Beibl. 98:53. 1909. Synonym: *Huperzia ribourtii* (Herter) Holub, Geobot. Phytotax. 20(1): 76. 1985. Type: Tahiti. *Ribourt s.n.* (syn: P, BONN-Nessel), *Nadeau s.n.* (syn: P). IPNI ID: urn:lsid:ipni.org:names:77125140-1

***P. rubricus* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys rubricus* Herter, Revista Sudamer. Bot. 8:25. 1949. Synonym: *Huperzia rubrica* (Herter) Tardieu, Adansonia sér. 2, 10: 18. 1970. Type: Madagascar. *H.Humbert 3717* (holo: P! [P466617]). IPNI ID: urn:lsid:ipni.org:names:77125141-1

***P. rupicola* (Alderw.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium rupicola* Alderw., Bull. Jard. Bot. Buitenzorg, ser. 2, 16:39. 1914. Synonym: *Huperzia rupicola* (Alderw.) Holub, Geobot. Phytotax. 20(1): 76. 1985. Type: New Guinea. *Gjellerup 1080* (holo: BO, iso: L! [L57385]). IPNI ID: urn:lsid:ipni.org:names:77125145-1

***P. salviniioides* (Herter) Ching, Acta Bot. Yunnan. 4(2):122. 1982.** Basionym: *Urostachys salviniioides* Herter, Bot. Arch. 3: 18. 1923. Synonym: *Huperzia salviniioides* (Herter) Holub, Geobot. Phytotax. 20(1): 76. 1985. Type: not designated, numerous Philippines specimens cited. Heterotypic synonyms: *Lycopodium edanoi* Copel., Philipp. J. Sci. 46:209. 1931. Synonym: *Huperzia edanoi* (Copel.) Holub, Geobot. Phytotax. 20(1): 72. 1985. Type: Philippines *G.E.Edaño* (holo: MICH, iso: NY! [NY127347]).

- P. samoanus* (Herter ex Nessel) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys samoanus* Herter ex Nessel, Revista Sudamer. Bot. 6:163. 1940. Synonyms: *Huperzia samoana* (Nessel) Holub, Geobot. Phytotax. 20(1): 76. 1985. Type: Samoa. *Dr Friedrich s.n.* (lecto: BONN-Nessel designated Øllgaard 1989: 100). IPNI ID: urn:lsid:ipni.org:names:77125146-1
- P. shangsiensis* C.Y.Yang, Acta Phytotax. Sin. 22(1):87. 1984.** Type: China. *W.T.Tsan 22289* (holo: SCBI).
- P. schlechteri* (E.Pritz.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium schlechteri* E.Pritz. in Schechter, Bot. Jahrb. Syst. 39:14. 1906. Synonym: *Huperzia schlechteri* (E.Pritz.) Holub, Geobot. Phytotax. 20(1): 76. 1985. Type: New Caledonia. *R.Schlechter 15174* (holo: B, iso: BM, K). IPNI ID: urn:lsid:ipni.org:names:77125148-1
- P. setifolius* (Alderw.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium setifolium* Alderw., Bull. Bot. Jahrb. Buitenzorg, ser. 2, 16:40. 1914. Synonym: *Huperzia setifolia* (Alderw.) Holub, Geobot. Phytotax. 20(1): 76. 1985. Type: Borneo. *Teysman s.n.* (iso: L! [L57387]). IPNI ID: urn:lsid:ipni.org:names:77125150-1
- P. sieboldii* (Miq.) Ching, Fl. Xisang 1:12. 1983.** Basionym: *Lycopodium sieboldii* Miq., Ann. Mus. Bot. Lugduno-Batavum 3: 184: 1897. Synonyms: *Huperzia sieboldii* (Miq.) Holub, Geobot. Phytotax. 20(1): 76. 1985. Type: Japan. *P.F.von Siebold s.n.* (iso: L, US! [US134339]).
- P. sooianus* Lawalrée, Acta Bot. Acad. Sci. Hung. 19: 195. 1973.** Synonyms: *Huperzia sooiana* (Lawalrée) Holub, Folia Geobot. Phytotax. 20: 77. 1985. Type: Zaire. *Evrard 3580* (holo: BR).
- P. squarrosus* (G.Forst.) Á. Löve & D. Löve, Taxon 26:324. 1977.** Basionym: *Lycopodium squarrosus* G.Forst., Fl. Ins. Austr. 479 (1786). Type: Tahiti. *J & G. Forster s.n.* (isosyn: BM! [BM1048443] and P!). Synonyms: *Huperzia squarrosa* (G.Forst.) Trevis.; Atti Soc. Ital. Sci. Nat. 17: 247. 1874; *Urostachys squarrosus* (G.Forst.) Herter; Bot. Arch. 3: 14. 1923. Heterotypic synonyms: *Lycopodium acutifolium* Desv. ex Poir., Encycl. suppl. 3: 599. 1813 [1814]. Type: Mauritius. *s.c. s.n.* (holo: P! [P4666615]). *Lycopodium epiceifolium* Desv. ex Poir., Encycl. suppl. 3:559. 1913 Synonym: *Huperzia epiceifolia* (Desv. ex Poir.) Trevis., Atti Soc. Ital. Sci. Nat. 17: 248. 1874. Type: Mauritius. *s.c. s.n.* (holo: P! [P0466614]). *Urostachys madagascariensis* (Nessel) Herter, Index Lyc. 68. 1949; Type: Madagascar. *H.Perrier 8276* (holo: P). *Lycopodium pseudosquarrosus* Pamp., Bull. Reale Soc. Tosc. Ortic. 111, 13: 99. 1908. Type: Indonesia. *Pampanini s.n.* (iso: P).
- P. staudtii* (Nessel) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys staudtii* Nessel, Repert. Spec. Nov. Regni Veg. 48:170. 1940. Type: Cameroon. *Staudt 476* (lecto: P, isolecto: BONN-Nessel). IPNI ID: urn:lsid:ipni.org:names:77125151-1
- P. strictus* (Baker) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium strictum* Baker, J. Bot. 11:271. 1882. Synonym: *Huperzia stricta* (Baker) Tardieu, Adansonia sér. 2, 10: 20. 1970. Type: Madagascar. *Parker s.n.* (holo: K). IPNI ID: urn:lsid:ipni.org:names:77125152-1
- P. subfalciformis* (Alderw.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium subfalciforme* Alderw., Bull. Jard. Bot. Buitenzorg, ser. 2, 28:44. 1918. Synonym:

Huperzia subfalciformis (Alderw.) Holub, Geobot. Phytotax. 20(1): 77. 1985. Type: Papua New Guinea. *R.Schlechter 13775* (syn: B! [B0114953]). IPNI ID: urn:lsid:ipni.org:names:77125153-1

***P. subulifolius* (Wall. ex Hook. & Grev.) S.R.Ghosh, Pterid. Fl. E. India 66. 2004.** Basionym: *Lycopodium subulifolium* Wall. ex Hook. & Grev., Icon. Filic. 1. 1827. Synonym: *Huperzia subulifolia* (Wall. ex Hook & Grev.) Trevis., Atti Soc. Ital. Sci. Nat. 17: 248. 1874. Type: Nepal. *N.Wallich s.n.* (holo: K).

***P. subtrifolius* (Brownlie) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium subtrifoliatum* Brownlie, Nova Hedwigia Beih., 55 (Pterid. Fl. Fiji) 24. 1977. Synonyms: *Huperzia subtrifoliata* (Brownlie) Holub Folia Geobot. Phytotax. 26(1): 93. 1991. Type: Fiji. *G.Brownlie 1287* (holo: CHR! [CHR341227]). IPNI ID: urn:lsid:ipni.org:names:77125155-1

***P. talamauanus* (Alderw.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium talamauanum* Alderw., Bull. Jard. Bot. Buitenzorg, ser. 2,28:45. 1918. Synonym: *Huperzia talamauana* (Alderw.) Holub, Geobot. Phytotax. 20(1): 77. 1985. Type: Sumatra [Indonesia]. *Bünnemeijer 814* (holo: BO, iso: BONN-Nessel, L! [L57395]). IPNI ID: urn:lsid:ipni.org:names:77125156-1

***P. terrae-guilelmii* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium terrae-guilelmii* Herter, Bot. Jahrb. Syst. 54:229. 1916. Synonym: *Huperzia terrae-guilelmii* (Herter) Holub, Geobot. Phytotax. 20(1): 77. 1985. Type: New Guinea. *Ledermann 9602* (holo: B). IPNI ID: urn:lsid:ipni.org:names:77125157-1

***P. tetrastichus* (Kunze) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium tetrastichum* Kunze, Bot. Zeit. (Berlin) 6:99. 1848. Synonym: *Huperzia tetrasticha* (Kunze ex Alderw.) Holub, Geobot. Phytotax. 20(1): 77. 1985. Type: Java [Indonesia]. *Zollinger 2460* (iso: G, HBG, L! [L57313]). IPNI ID: urn:lsid:ipni.org:names:77125159-1

***P. tetrastichoides* (A.R.Field & Bostock) A.R.Field & Bostock comb. nov.** Basionym: *Huperzia tetrastichoides* A.R.Field & Bostock, Austrobaileya 7(4): 711. 2008. Type: Australia. *A.R.Field & O.Rawlins 1139* (holo: BRI, iso: CNS). IPNI ID: urn:lsid:ipni.org:names:77125158-1

***P. toppingii* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys toppingii* Herter, Bot Arch. 3:15. 1923. Synonym: *Huperzia toppingii* (Herter) Holub, Geobot. Phytotax. 20(1): 77. 1985. Type: Philippines. *D.L.Topping 1096* (iso: BONN-Nessel, NY! [NY127365], US! [US134342]). IPNI ID: urn:lsid:ipni.org:names:77125160-1

***P. tournayanus* Lawalrée, Acta Bot. Acad. Sci. Hung. 19:197. 1973.** Synonym: *Huperzia tournayana* (Lawalrée) Holub, Geobot. Phytotax. 20(1): 77. 1985. Type: Congo. *J.Louis 4012* (iso: P! [P507738]).

***P. trifolius* (Copel.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium trifoliatum* Copel., Bernice P. Bishop Mus. Bull. 59:7. 1929. Synonym: *Huperzia trifoliata* (Copel.) Holub, Geobot. Phytotax. 20(1): 77. 1985. Type: Fiji. *H.E.Parks 20225* (holo: UC! [351031], iso: NY! [NY127366]). IPNI ID: urn:lsid:ipni.org:names:77125161-1

- P. trigonus* (C.Chr.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium trigonum* C.Chr., Dansk Bot. Ark. 7:191. 1932. Synonym: *Huperzia trigona* (C.Chr.) Tardieu, Adansonia sér. 2, 10: 20. 1970. Type: Madagascar. *H. Perrier* 8270 (holo: P! [P466613]). IPNI ID: [urn:lsid:ipni.org:names:77125162-1](https://nomenclature.ipni.org/names/77125162-1)
- P. ulcifolius* (Sw.) S.R.Ghosh, Pterid. Fl. E. India 64. 2004.** Basionym: *Lycopodium ulcifolium* Sw., Syn. Fil. 177. 1806. Synonym: *Huperzia ulcifolia* (Sw.) Trevis., Atti Soc. Ital. Sci. Nat. 17: 248. 1874. Type: India orientalis.
- P. varius* (R.Br.) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium varium* R.Br., Prodr. 165. 1810. Synonym: *Huperzia varia* (R.Br.) Trevis., Atti Soc. Ital. Sci. Nat. 17:247. 1874. Type: Australia. *R. Brown Iter Austral.* 124 (isolecto: BM!, K!). Heterotypic synonyms: *Lycopodium billardierei* Spring, Bull. Acad. Roy. Sci. Belg. 8:516 1841; *Huperzia billardierei* (Spring) Rothm., Feddes Repert. Spec. Nov. Regni Veg. 54(1) 1944. Type: Nova Hollandia [Australia]: *La Billardière s.n.* (syn: P-Jussieu!). *Lycopodium novae-zelandicum* Colenso, Trans. & Proc. New Zealand Inst. 19: 275. 1887; *Huperzia novae-zelandica* (Colenso) Holub, Folia Geobot. Phytotax. 20:75 (1985); Type: New Zealand (holo: WELT): *Lycopodium flagellaria* Bory in Duperry, Voy. monde, Bot. 1: 248 t. 26. 1829: Type: Nouvelle Irlande [Papua New Guinea] *Durville & Lesson s.n.* (syn: ?); *d'Offack s.n.* (syn: P). *Lycopodium pachystachyum* Desv. ex Poir., Encycl. suppl. 3: 544. 1813 [1814]. Type: Nouvelle Hollande [Australia]. *s.c. s.n.* (holo: P). IPNI ID: [urn:lsid:ipni.org:names:77125163-1](https://nomenclature.ipni.org/names/77125163-1)
- P. whitfordii* (Herter) A.R.Field & Bostock comb. nov.** Basionym: *Urostachys whitfordii* Herter, Bot. Arch. 3:14. 1923. Synonym: *Huperzia whitfordii* (Herter) Holub, Geobot. Phytotax. 20(1): 78. 1985. Type: Philippines. *H.N. Whitford* 798 (holo: PNH lost 1945, iso: MICH! [MICH1191097], US! [US134345]). Heterotypic synonyms: *Lycopodium magnusianum* Herter, Hedwigia 49:91. 1909. *Huperzia magnusiana* (Herter) Holub, Geobot. Phytotax. 20(1): 74. 1985. Type: Philippines. *M.S. Clemens* (holo: B!). IPNI ID: [urn:lsid:ipni.org:names:77125164-1](https://nomenclature.ipni.org/names/77125164-1)
- P. xiphophyllus* (Baker) A.R.Field & Bostock comb. nov.** Basionym: *Lycopodium xiphophyllum* Baker, Handb. fern-allies 12.1887. Synonym: *Huperzia xiphophylla* (Baker) Tardieu, Adansonia sér. 2, 10: 20. 1970. Type: Madagascar. *R. Baron* 4512 (holo: K! [K351213]). IPNI ID: [urn:lsid:ipni.org:names:77125165-1](https://nomenclature.ipni.org/names/77125165-1)
- P. yandongensis* Ching & C.F.Zhang, Bull. Bot. Res., Harbin 3(3): 2. 1983.** Type: China. *K.Y. Shing* 256.
- P. yunnanensis* Ching, Acta Bot. Yunnan. 4(2): 121. 1982.** Type: China. *K.M. Feng* 7274 (holo: PE).

References

- Bruce JG (1976) Development and distribution of mucilage canals in *Lycopodium*. *American Fern Journal*, 63, 481–491.

- Christenhusz MJM, Zhang X-C, Schneider H (2011) A linear sequence of extant families and genera of lycophytes and ferns. *Phytotaxa*, 19, 7–54.
- Holub J (1964) *Lycopodiella*, nový rod radu Lycopodiales. *Preslia*, 36, 16–22.
- Ji S-G, Hou K-K, Wang J, Pan S-L (2008) A molecular phylogenetic study of Huperziaceae based on chloroplast *rbcL* and *psbA-trnH* sequences. *Journal of Systematics and Evolution*, 46, 213–219.
- McNeill J, Barrie F R, Burdet HM, Demoulin V, Hawksworth DL, Marhold K, Noel DH, Prado J, Silva PC, Skog JE, Wiersema JH, Turland NJ (2006) International code of botanical nomenclature (Vienna Code): Adopted by the Seventeenth International Botanical Congress Vienna, Australia. July 2005. *Regnum Vegetabile*, 146.
- Øllgaard B (1975) Studies in the Lycopodiaceae I. Observations of the structure of the sporangium wall. *American Fern Journal*, 65, 19–27. doi: 10.2307/1546590
- Øllgaard B (1979) Studies in the Lycopodiaceae II. The branching patterns and infrageneric groups of *Lycopodium sensu lato*. *American Fern Journal*, 69, 49–61. doi: 10.2307/1546896
- Øllgaard B (1987) A revised classification of the Lycopodiaceae s.l. *Opera Botanica*, 92, 253–178.
- Øllgaard B (1989a) Index of the Lycopodiaceae. *Biologiske skrifter*. Royal Danish Academy of Sciences and Letters.
- Øllgaard B (2012a) New combinations in Neotropical Lycopodiaceae. *Phytotaxa*, 57, 10–22.
- Øllgaard B (2012b) Nomenclatural changes in Brazilian Lycopodiaceae. *Rodriguésia*, 63, 479–482.
- Wagner WH, Beitel JM (1992) Generic classification of modern North American Lycopodiaceae. *Annals of the Missouri Botanic Gardens*, 79, 676–686. doi: 10.2307/2399759
- Whittier DP (2006) Gametophytes of four tropical, terrestrial *Huperzia* species (Lycopodiaceae). *American Fern Journal*, 96, 54–61. doi: 10.1640/0002-8444(2006)96[54:GOFTTH]2.0.CO;2
- Whittier DP, Braggins JE (1992) The young gametophyte of *Phylloglossum* (Lycopodiaceae). *Annals of the Missouri Botanic Gardens*, 79, 730–736. doi: 10.2307/2399762
- Whittier DP, Braggins JE (2000) Observations on the mature gametophyte of *Phylloglossum* (Lycopodiaceae). *American Journal of Botany*, 87, 920–924. doi: 10.2307/2656989
- Whittier DP, Storchova H (2007) The gametophyte of *Huperzia selago* in culture. *American Fern Journal*, 97, 149–154. doi: 10.1640/0002-8444(2007)97[149:TGOHSI]2.0.CO;2
- Wikström N, Kenrick P (1997) Phylogeny of Lycopodiaceae and the relationships of *Phylloglossum drummondii* Kunze based on *rbcL* sequences. *International Journal of Plant Sciences*, 158, 862–871. doi: 10.1086/297501
- Wikström N, Kenrick P (2000) Phylogeny of epiphytic *Huperzia* (Lycopodiaceae): paleotropical and neotropical clades corroborated by *rbcL* sequences. *Nordic Journal of Botany*, 20, 165–171. doi: 10.1111/j.1756-1051.2000.tb01561.x
- Wikström N, Kenrick P (2001) Evolution of Lycopodiaceae (Lycopsidea): estimating divergence times from *rbcL* gene sequences by use of nonparametric rate smoothing. *Molecular Phylogenetics and Evolution*, 19, 177–186. doi: 10.1006/mpev.2001.0936

- Wikström N, Kenrick P, Chase M (1999) Epiphytism and terrestrialization in tropical *Huperzia* (Lycopodiaceae). *Plant Systematics and Evolution*, 218, 221–243. doi: 10.1007/BF01089229
- Wilce JH (1972) Lycopod spores, 1. General spore patterns and the generic segregates of *Lycopodium*. *American Fern Journal*, 52, 65–79. doi: 10.2307/1546437
- Yatsentyuk S, Valiejo-Roman KM, Samigullin TH, Wikstrom N, Troitsky AV (2001) Evolution of Lycopodiaceae inferred from spacer sequencing of chloroplast rRNA genes. *Russian Journal of Genetics*, 37, 1274–1280. doi: 10.1023/A:1011969716528
- Zhang L-B (2012) The nomenclature of the lycophyte species *Phlegmariurus mingcheensis* Ching (Huperziaceae). *Taxon*, 61, 665–666.